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( TRANSPORTABLE INFLATABLE ANTENNA, RD 607 )

Purpose: The scope of this project is to design, develop, and test one antenna system for the 350 - 10000 mc range and to fabricate and deliver five complete antenna systems with indoor mounts and two interchangeable outdoor mounts.

Personnel: Electrical Engineer:  25X1  
Mechanical Engineers:

Status: A wire type logarithmically periodic structure having the same design parameters as the printed sheet structure mentioned in last month's report was constructed. Patterns taken on this structure over the frequency range of 600 to 6000 mc were very similar to those of the printed sheet structure even at the high end of the band where the construction tolerances are very difficult to maintain.

The location of the phase center of this wire structure was determined over a half-period for  $\Psi$  angles from 15 to  $90^\circ$  in  $15^\circ$  steps. It was found that the distance from the phase center to the apex of the structure varied considerably over a half period especially for the high  $\Psi$  angles (above  $60^\circ$ ). From the limited data taken so far, it appears that the location of the phase center over a half period is more stable for the sheet type structures.

Some time has been spent on the design of mount and supporting structure for the inflatable dish.

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**Future Plans:** Since the location of the phase center of these structures does vary with frequency, we plan to mount various feeds in front of a 4 foot dish in such a way that the distance from the feed to the reflecting surface can be varied along the axis of the dish. Then, by plotting relative gain versus the spacing of the feed from the reflecting surface for several logarithmically related frequencies over the desired band, a good compromise location for the feed can be found. At the same time, the characteristic impedance of the various feeds surface will be measured.

More work will be done on the design of the actual inflatable dish and supporting structures during the next month.

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